AMENDMENTS TO THE DRAWINGS:

The attached drawing is a Replacement Sheet for FIG. 3. In FIG. 3, the legend "<u>100</u>" is added to the figure to correspond with the description in the specification of "file device 100 of the present invention is composed of a host computer 101 and an external storage device 102" (specification, page 11, lines 4-6).

REMARKS

In the April 5, 2006 Office Action, claims 29 and 31 were rejected under 35 USC § 112, second paragraph as indefinite. Claims 2-4, 7-9, 12-14, 17-19 and 21-32 were rejected under 35 USC § 102 as anticipated by Elko (US Patent No. 5,537,574). Claims 25 and 29-32 are herein amended. Claims 2-4, 7-9, 12-14, 17-19 and 21-32 are pending and under consideration. The rejections are respectfully traversed below.

Interview

On September 12, 2006 the Examiner granted a personal interview. The Applicant acknowledges with appreciation the indication during the interview that the rejections under 35 USC § 112, second paragraph would be withdrawn, if the independent claims are amended to clarify what the external storage device is external to.

Rejections under 35 USC 112

Based on the discussions with the Examiner during the Interview discussed above, the independent claims are herein amended to clarify that the external storage device is external to the host computer. All of the independent claims are herein amended in that manner. Therefore as amended, the claims particularly point out and distinctly claim the subject matter of Applicant's invention. It is respectfully requested that the rejections under 35 USC § 112, second paragraph be withdrawn in the next Office Action.

Rejections under 35 USC § 102

In item 5 spanning pages 3-5 of the Office Action, claims 2-4, 7-9, 12-14, 17-19 and 21-32 were rejected under 35 USC § 102(b) as anticipated by Elko.

> Claim 29 recites
>
> storage control means for recording in the blocks in the external storage device the file, after recording the management information and sequence information indicating a sequence in which the file is to be recorded in the blocks in the external storage device, where the external storage device is external to the storage control means

(claim 29, lines 7-10). An example of "storage control means" is "host computer 101" as described in the application on page 11, lines 7-10 and illustrated in FIG. 3. In the disclosed embodiment, the "external storage device 102", which is external to the host computer 101 (as described in the application at page 11, lines 4-6 and illustrated in FIG. 3), has blocks allocated to store a file.

In the April 5, 2006 FINAL Office Action, the Examiner asserted that "the expanded storage [in Elko] corresponds to the external storage" (Office Action, page 3, line 9) recited in claim 29. However, the expanded storage (ES) of Elko cited in the Office Action cannot be considered external storage as recited in claim 29, because according to Elko, "the MS/ES storage combination may be considered as a single random access storage unit internal to the CPC" (Elko, column 13, lines 28-30). In other words, the expanded storage (ES) is internal to the central processing complexes (CPC).

During the September 12, 2006 Interview, the Examiner stated that contrary to the interpretation set forth in the April 5, 2006 Office Action, the DASD Director 207 combined with external disk storage devices DASD-1 through DASD-S are now being interpreted as representing a host computer and the computer processing complexes CPC-1 and CPC-M combined with the SES Cache are now being interpreted as representing the external storage as recited in claim 29. This interpretation is the opposite of what is recited in claim 29.

It is important to note that Elko defines DASDs as

direct access storage devices (DASD's) which are shared by independently-operating computer systems. Typical nomenclature for hierarchally-arranged storage systems classify DASD and other such storage facilities as 'secondary' storage. In this regard, secondary storage includes all facilities from which data must be moved to 'primary' storage before it can be directly referenced by a CPU ... [in] this regard, a shared cache would be included in a primary level of storage for a multi-computer, data-sharing system

(Elko, column 4, lines 1-16). In other words, DASD's are external storage devices, external to the computer processing complexes.

In Elko referring to FIG. 2, the

DASD Director 207 is connected to the MS (204) [main storage] for controlling the storing of data on disk storage devices, DASD-1 through DASD-K [This also applies to DASD-1 through DASD-S in FIG. 1]. The DASD directory[sic] 207 controls the data flows between all CPCs [computer processing complexes] in the sysplex and all the DASDs in the illustrated bank of DASDs, so that any CPC [computer processing complex] can access any record on any DASD

(Elko, column 13, lines 40-45). In other words, the DASD Director 207 facilitates access to external storage devices.

However, in contrast to the Examiner's current interpretation of Elko, a dedicated external disk controller (i.e., the DASD Director) combined with and controlling access to DASD's cannot be equated with a host computer, because a dedicated disk controller is limited to controlling access to disk drives, while a host computer is concerned with providing access to other computers in a computer network.

Shared electronic storage (SES) "is a high-speed non-volatile electronic memory (SES at 101) which functions as a cache shared by the computer systems. The memory (101) is attached with high-speed links 106-1 through 106-M to the computer systems CPC-1 through CPC-M" (Elko, column 15, lines 16-21). In other words, the SES is associated with local cache and connected to the CPCs via very high-speed links and as discussed above, the SES functions as a local primary storage in regard to the CPCs. Thus, the SES does not qualify as a standalone storage device external to the CPCs.

In addition, CPC-1 through CPC-M are described as "central processing complexes (CPCs) having local buffers" (column 2, line 17), where there are Local Cache Buffers or "LCBs allocated in the CPC's MS/ES" (column 5, line 52). These components are packaged together in an integrated circuit in a configuration, where "[e]ach CPC is of the type shown in FIG. 2, which may be a multiprocessor" (column 13, lines 4-5). "Each CPC in the sysplex operates with a storage hierarchy, which for example may include a private high-speed, hardware cache in each CPU ... of a CPC, a shared hardware cache ... [including SES], a main storage ... (MS) ... [and] a hardware storage area (HSA)" (column 13, lines 18-24). The expanded storage (ES) in FIG. 2, 206 of Elko is described as "the MS/ES storage combination may be considered as a single random access storage unit internal to the CPC" (column 13, lines 28-30). The main and expanded storage "MS and ES ... belong to the same user operation, and they may be viewed as being in the same CPC cache" (column 13, lines 36-37). Therefore, the extended storage in Elko was incorrectly equated with external storage of the present invention. Thus, nothing was cited or found that teaches or suggests allocating blocks to an external storage device, as recited in claim 29.

In regard to additional citations in Elko offered by the Examiner during the Examiner Interview on January 24, 2006, nothing was found in column 8, lines 1-45 or column 5, line 61 that teaches or suggests allocating blocks to an external storage device.

Furthermore, claim 29 as amended recites, "management information indicating the blocks that have been allocated" (claim 29, lines 5-6). For example, as described in the application at page 11, lines 30-37; page 12, lines 2-14; page 13, lines 27-37 and as illustrated in FIG. 3, management information stored in the external storage device 102 indicates the blocks that have been allocated. In contrast, what was cited in Elko is a DASD Director shown in FIG. 1, which "controls the data flows between all CPCs in the sysplex and all the DASDs" (column 13, lines 40-48). In other words, the DASD Director controls copies of data sent to external "disk storage devices DASD-1 through DASD-K" (column 13, lines 41-42), but nothing

has been cited or found that teaches or suggests indicating blocks allocated in an external storage device. The Office Action also, cited "DB2 and IMS" programs which "in a CPC may have their own LCBs allocated in the CPC's MS/ES" (column 5, lines 48-53). As discussed above, "the MS/ES storage combination may be considered as a single random access storage unit internal to the CPC" (column 13, lines 4-31); therefore, this has nothing to do with indicating blocks that have been allocated in an external storage device.

Claim 29 as amended also recites, "storage control means for recording in the blocks in the external storage device the file, after recording the management information and sequence information indicating a sequence in which the file is to be recorded in the blocks in the external storage device" (claim 29, lines 7-9). In an example described in the specification at page 13, lines 23-37 and as illustrated by steps S1-6 and S1-7 of FIG. 4, a file is written to the allocated blocks of the external storage device after management information and sequence information is stored in the external storage device. As "the management and sequence information indicate a sequence in which the file is to be recorded in the blocks of the external storage device" (claim 29, last two lines) that have been allocated, the present invention distinguishes over Elko by both where and when the management information and the sequence information are stored.

What was cited in Elko was:

allocation and size of each LCB [local cache buffer] is dependent on the respective program being used in the CPC [central processing complex]. The LCBs may have different sizes and different numbers in the different LCs. Any local cache buffer may be changed to a different size during program execution. A local cache attached to a SES is identified in the SES by a local cache identifier (LCID) which the operating system assigns uniquely to the LCs when they are logically attached to the SES. The LCID is saved in local cache controls (105) at the SES cache. Local cache controls are used by SES to maintain information regarding each attached local cache

(column 5, lines 61-67 and column 6, lines 1-4). Also cited in Elko was "the operating system services assign a local cache identifier to be used to uniquely identify the local cache and its attachment to the SES cache" (column 6. lines 12-14). Neither of these passages have anything to do with "recording in the blocks in the external storage device the file, after recording the management information and sequence information indicating a sequence in which the file is to be recorded in the blocks in the external storage device" as recited at the end of claim 29.

Furthermore, Elko describes indexing a directory "by the names of pages which are objects of READ or WRITE commands" (column 16, lines 29-39). This has nothing to do with the sequence in which data and metadata is recorded. Allocating buffer size and designating local cache identifiers are tasks prior to any writing of data in a buffer or local cache and are

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different than the sequence of "recording [information] in the blocks in the external storage device" (claim 29, line 7). Thus, what was cited in Elko cannot be equated with "indicating a sequence in which the file is to be recorded in the blocks in the external storage device" (claim 29, last 2 lines), because the allocation and size of each local cache buffer as discussed in column 6, lines 12-14 of Elko is different than what is recited in claim 29.

In addition, the Office Action cited memory 101 in FIG. 1 as described in column 5, line 61 to column 6, line 4 of Elko as disclosing "storage control means for recording in the blocks in the external storage device the file, after the management information and sequence information indicating a sequence in which the file is to be recorded in the blocks" (Office Action, page 3, lines 13-15) as previously recited at the end of claim 29. Memory 101 in FIG. 1 is described as an "SES cache [that] contains a name of a data element registered in SES by any of its attached CPCs ... this directory name also identifies a copy of the data element stored in ... one of the DASDs" (column 14, lines 28-41). Elko also taught that "memory 101 includes management logic 110 ... which manages all memory storage operations" (column 15, lines 33-40). However, these passages of Elko do not describe operating on management information and sequence information as recited in claim 29.

Furthermore, what was cited in Elko assumes "that there are two systems, S1 and S2, which are involved in data sharing. In illustrating the sequence of events in the example, use is made of a representative directory entry 3201" (column 51, lines 14-19). The use of the word "sequence" in this phrase has nothing to do with "a sequence in which the file is to be recorded in the blocks" as recited in claim 29. As apparent form the words quoted from column 51 in this portion of Elko, the "sequence" relates to "events in the example" not the order in which blocks of a file are stored.

In regard to additional passages in Elko offered by the Examiner during the Examiner Interview on January 24, 2006, nothing has been found in column 6 that discloses the limitations recited in claim 29. Column 6 is directed to local cache operation (not external storage as required by claim 29). Column 49, lines 24-30 which refer to FIG. 30, use the word "sequence" in reference to writing an updated page in shared cache. This has nothing to do with the operations on sequence information and management information recited in claim 29. Thus, nothing has been cited or found in Elko that discloses all of the limitations recited in claim 29.

Independent claim 31 recites operations using an "external storage device" in a manner similar to the file device recited in claim 29. Claims 2-4 and 21 depend from claim 29 and claims

12-14 and 23 depend from claim 31. Thus, claims 2-4, 12-14, 21, 23 and 31 distinguish over the applied art for the reasons discussed in regard to claim 29.

Independent claims 25, 30 and 32 recite recording in memory blocks, management information and sequence information "indicating a sequence in which the file was recorded in the blocks" in a manner similar to claim 29 and as described in the specification at least at page, 12, lines 2-14; page 13, lines 23-37; and page 18, lines 9-32; and shown in FIG. 3, FIG. 4 (step S1-1 through step S1-7) and FIG. 7A through FIG. 7E. Therefore, claims 25, 30 and 32 distinguish over the applied art for reasons discussed in regard to claim 29. Since claims 7-9, 17-19, 22, 24 and 26-28 depend from claims 25, 30 and 32, these claims also distinguish over the applied art for the reasons discussed in regard to claim 29.

Request for Examiner Interview

Unless the rejections based on Elko are withdrawn, and if the Examiner continues to interpret the DASD Director 207 combined with external disk storage devices DASD-1 through DASD-S as representing a host computer and the computer processing complexes CPC-1 and CPC-M combined with the SES Cache as representing the external storage, then the Applicant respectfully requests an additional Interview before the next Office Action is issued to further discuss the elements in Elko that the Examiner's interpretations are based on, because the elements in Elko are the opposite of what is recited in claim 29.

CONCLUSION

It is submitted that the Elko reference does not teach or suggest the features of the claimed invention. Thus, it is submitted that claims 2-4, 7-9, 12-14, 17-19 and 21-32 are in condition for allowance.

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

Finally, if there are any additional fees associated with filing of this Amendment, please charge same to our Deposit Account No. 19-3935.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to. Commissioner for Patents. PO Box 1450, Alexandria, VA 22313-1450 on October 5 ,2006
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